What Is Claimed Is:

1. A method of transmitting a communication from a first network entity to a second network entity, wherein the first network entity and the second network entity are coupled to a communication medium, comprising:

receiving a communication from a process operating on a first network entity, wherein the communication is directed to a second network entity;

distributing elements of said communication into multiple portions;

sending a first portion of said communication on a first channel established on a first communication medium coupled to said first network entity and said second network entity; and

sending a second portion of said communication on a second channel established on a second communication medium coupled to said first network entity and said second network entity.

2. The method of claim 1, wherein said communication is transmitted to said second entity at a data rate in excess of one gigabit per second.

3. The method of claim 1, wherein said communication is an Ethernet frame and wherein each of said multiple portions of said communication comprises one or more bytes.

4. The method of claim 1, in which said receiving comprises receiving a communication at a distribution module of a network interface device from a medium access control module across a first interface, wherein said distribution module is configured to distribute portions of said communication among a plurality of communication channels.

5. The method of claim 4, wherein said first interface is

configured to convey said communication at a data rate exceeding one gigabit per second.

6. The method of claim 4, in which said sending a first portion of said communication comprises forwarding an apportionment of said communication elements to a first physical coding module across a second interface; and

wherein said first physical coding module is configured to encode said apportionment of communication elements into a series of codes for transmission over said first communication medium.

7. The method of claim 6, wherein said first physical coding module:

encodes a first element of said apportionment with a first start code if said first element is the first element of said communication and otherwise encodes said first element of said apportionment with a second start code; and

encodes a last element of said apportionment with a first end code if said last element is the last element of said communication and otherwise encodes said last element of said apportionment with a second end code.

8. The method of claim 6, wherein said second interface is configured to convey said first apportionment at a data rate exceeding one gigabit per second.

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9. The method of claim 1, in which said distributing comprises allotting elements of said communication among a plurality of channels established to convey a communication between said first network entity and said second network entity.

10. The method of claim 9, wherein each of said channels is

configured to traverse a separate physical communication link.

11. The method of claim 9, wherein each of said channels is configured to traverse a common physical communication link, said common physical communication link comprising said first communication medium and said second communication medium.

12. The method of claim 1, wherein:

one of said first portion of said communication and said second portion of said communication includes a first start symbol configured to indicate a start of said communication and the other of said first portion and said second portion includes a second start symbol configured to indicate a start of a portion of said communication; and

one of said first portion of said communication and said second portion of said communication includes a first end symbol configured to indicate an end of said communication and the other of said first portion and said second portion includes a second end symbol configured to indicate an end of a portion of said communication.

13. The method of claim 1, further comprising:

transmitting a first idle signal on said first channel and said second channel prior to said receiving; and

transmitting a different idle signal on said first channel and said second channel after said sending a second portion of said communication.

14. The method of claim 1, further comprising:

encoding the first element of said first portion of said communication with a first starting delimiter; and

encoding the first element of said second portion of said communication with a second starting delimiter.

15. The method of claim 14, further comprising:

encoding the last element of said first portion of said communication with a first ending delimiter; and

encoding the last element of said second portion of said communication with a second ending delimiter.

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16. A method of receiving a communication at a second network entity from a first network entity, wherein the first network entity and the second network entity are coupled to a dedicated communication medium, comprising:

receiving at a second network entity a first portion of a communication from a first network entity on a first channel established between said first network entity and said second network entity;

receiving at said second network entity a second portion of said communication on a second channel established between said first network entity and said second network entity;

collecting an element of said first portion and an element of said second portion; and

forwarding said communication toward a process operating on said second network entity.

17. The method of claim 16, wherein said communication is an Ethernet frame.

Sub Q13

18. The method of claim 17, in which said receiving a first portion of a communication comprises:

receiving over a first communication channel a first transmission from said first network entity, said first transmission including:

a first signal configured to indicate one of a beginning of a

communication and a beginning of a portion of a communication; and

a first series of one or more elements of said communication.

19. The method of claim 18, in which said receiving a second portion of said communication comprises:

receiving over a second communication channel a second transmission from said first network entity, said second transmission including:

a second series of one or more elements of said communication; and

a second signal configured to indicate one of an end of said communication and an end of a portion of said communication.

20. The method of claim 16, wherein said first communication channel and said second communication channel traverse a common communication medium.

21. The method of claim 16, wherein said first communication channel and said second communication channel traverse separate physical mediums.

22. The method of claim 16, in which said collecting comprises:

receiving at a collection module an element of said first communication portion and an element of said second communication portion; and

combining said element of said first communication portion and said element of said second communication portion.

Sub Q'1 23. The method of claim 22, wherein said forwarding comprises sending said combined elements to a medium access control module across a first interface.

24. The method of claim 23, wherein said first interface is configured to convey said combined elements at a data rate greater than one gigabit per second.

25. The method of claim 16, further comprising:

receiving a first idle code on each of said first channel and said second channel prior to said receiving a first portion of a communication; and

receiving a second idle code on each of said first channel and said second channel after said forwarding.

26. A method of distributing a communication from a first network entity to a second network entity across a plurality of channels, comprising:

receiving a communication frame directed from a first network entity to a second network entity, said frame comprising a series of bytes;

distributing said series of bytes to a plurality of coding modules, wherein each coding module receives and encodes a separate set of bytes from said series of bytes;

framing each of said sets of bytes; and

transmitting each of said sets of bytes across a separate channel coupling said first network entity to said second network entity.

27. The method of claim 26, in which said framing comprises:

encoding a first byte of a first set of bytes with a first start code;

encoding a first byte of a second set of bytes with a second start code;

encoding a last byte of said first set of bytes with a first end code; and

encoding a last byte of said second set of bytes with a second end code.

28. A method of receiving a communication from a first network entity at a second network entity across a plurality of channels, comprising:

receiving synchronization information across each of a plurality of channels coupling a first network entity to a second network entity;

receiving at said second network entity a set of bytes across each of said channels;

detecting a first byte and a last byte in each of said sets of bytes;

decoding each of said sets of bytes; and

re-assembling said sets of bytes into a stream of bytes of a communication directed from said first network entity to said second network entity.

29. The method of claim 28, in which:

said receiving synchronization information comprises receiving a first idle code on each of said channels; and

wherein said method further comprises receiving a second idle code on each of said channels after said receiving a set of bytes across each of said channels.

30. A method of operating a computer to communicate with a network entity, comprising:

operating a medium access control module configured to communicate a first frame from a computer system to a network entity and receive a second frame at said computer system from said network entity;

operating a distribution module to apportion contents of said first frame among a plurality of communication channels coupling said computer system to said network entity through one or more communication links; and

operating a collection module to combine contents of said second frame received through said plurality of communication channels.

31. The method of claim 30, further comprising:

operating a physical medium module configured to encode said first

frame contents for transmission over said communication channels and decode said second frame contents received over said communication channels.

32. The method of claim 30, wherein:

said distribution module and said collection module interface with each of said communication channels at a rate exceeding one gigabit per second; and

said medium access control module interfaces with said distribution module and said collection module at a rate substantially equal to the sum of said rates at which said communication channels interface with said distribution module and said collection module.

33. The method of claim 30, wherein said first frame is a communication frame configured for transmission over an network compatible with an Ethernet communication protocol.

34. A network interface device for coupling a computer system to a network, comprising:

a medium access control module configured to communicate with an application executing on a computer system;

multiple physical coding modules, wherein each said physical coding module is configured to encode packet bytes for transmission on a network medium and decode encoded bytes received from said network medium, and wherein said network medium is configured to carry said bytes between said computer system and a network entity;

a distributor configured to accept a first packet from said medium access control module and divide said first packet into a first plurality of packet bytes for transmission across said network medium; and

a collector configured to accept a second plurality of packet bytes from said multiple physical coding modules and combine said second plurality of

packet bytes into a second packet for transfer to said medium access control module.

35. The network interface device of claim 34, further comprising a first set of interfaces coupling said multiple physical coding modules to said distributor and said collector, wherein each of said first set of interfaces is configured to operate at a rate exceeding one gigabit per second.

36. The network interface device of claim 35, further comprising a second interface coupling said distributor and said collector to said medium access control module, wherein said second interface is configured to operate at a rate approximately equal to the sum of said operation rates of said first set of interfaces.

37. The network interface of claim 36, wherein said second interface is configured to operate at a data rate of approximately ten gigabits per second.

38. A computer readable storage medium storing instructions that, when executed by a computer, cause the computer to perform a method for distributing a communication from a first network entity to a second network entity across a plurality of channels, the method comprising:

receiving a communication frame directed from a first network entity to a second network entity, said frame comprising a series of bytes;

distributing said series of bytes to a plurality of coding modules, wherein each coding module receives and encodes a separate set of bytes from said series of bytes;

framing each of said sets of bytes; and

transmitting each of said sets of bytes across a separate channel coupling said first network entity to said second network entity.

39. A device for implementing an Ethernet protocol to communicate Ethernet frames between a first network entity and a second network entity, comprising:

a distributor configured to distribute bytes of a first Ethernet frame over a plurality of channels in a first order;

a collector configured to receive bytes of a second Ethernet frame over said channels in a second order;

a first interface coupling said distributor and said collector to a medium access control module at a data rate exceeding one gigabit per second, wherein data is transferred across said first interface in multi-byte units in synchronization with both edges of a clock signal; and

a second interface coupling said distributor and said collector to a physical coding module at a data rate exceeding one gigabit per second in synchronization with both edges of a second clock signal.

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